

PROGRESS REPORT

For

VERSATILE, HIGH PRECISION STEREO
POINT TRANSFER DEVICE

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For

VERSATILE, HIGH PRECISION STEREO
POINT TRANSFER DEVICEOBJECTIVE ASSEMBLY

The motions to improve vignetting and brightness have been completed on a comparison viewer and are now under test.

Field lens additions to 1X and 7X objectives and bending of .38 lower field lens appear to give satisfactory answers to problems seen previously. The high intensity light source has also been modified to introduce a lens to concentrate light for the 7X objective lens. A brightness increase of 5 times at 125X magnification is now seen. Lens is automatically inserted when highest magnification range is selected. To control film temperature with this increased brightness, a heat reflecting filter has been added to the existing IR filtering means.

Laser systems have been under test and checkout. Circuit improvements to eliminate unwanted triggering of laser has been of main concern. Apparently, because of bundling trigger circuit wires in harness spikes in adjacent circuits have introduced signals that fire laser. Filters have been added to reject all but the wanted firing signals. Some trouble has been experienced in the reticle drive circuit. The film marking mode selector and reticle selection schemes have had improvements made in their reliability. The circuit changes have been made and now are in test before final assembly of objective assemblies.

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VACUUM FILM HOLDDOWN

Glass platens with three (3) highly polished micro-grooves each are being made as an attempt to get a solution for the pulldown problem. It is hoped that groove visibility will be greatly reduced and, at the same time, give enough exhaust path for the air bubbles under film.

To improve seal at the loop forming slot during loop forming and tandem film viewing modes, a pneumatic clamp has been developed to holddown film across the width. The bending of film at the slot's edge has caused poor holddown performance by excessive leakage with new manifold design because film is held above the platen at the ends of the manifold. The transverse clamp has helped overcome this problem, but has introduced very small clearance with objective lenses, loop forming rollers and their film threading facility. The clamp is divided to right and left sections so that its action is related to the right and left viewing areas and is driven by air pressure seen at manifolds. Because air pressures are very low, gentle film handling is assured.

Experimental work is underway to examine interruption of vacuum to minimize bubble formation. The thought here has been to reduce seal between film and platen momentarily so that air under film may escape to manifold. The combination of low vacuum cycling and diffusion technique may reduce holddown time but no conclusion has been reached.

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SCANNING DRIVE

Some of the modified gear boxes have been received, tested and installed on a comparison viewer. Static torque tests have been completed, but no other evaluation has been made. Tests are underway to evaluate precision of correspondence at various magnification ratios. The new increments of 1, 7 and 50 microns per step appear quite useful for precise image positioning.

The joystick has been thoroughly checked out mechanically and electrical checks are underway with system tests. At the present time, correspondence is quite good for several 1:1 magnification ratio combinations (in uncoupled mode), but falls off for 2:1 and high ratios. These results are of quite concern as they contradict in part the circuit set-up established during its magnification against stepping frequency alignment. Circuit checkout correction is now in progress.

Because all axes stop when any carriage has reached a limit, a buzzer has been added to tell operator why machine has stopped, and that a failure has not occurred. Normally, buzzer should be OFF and may be actuated only during film loading with carriages at rear extreme, or when viewing 70 mm film with a large amount of overlap.

Work To Be Completed During Next Reporting Period

- 1) Install and debug scanning drive modification
- 2) Complete system debugging
- 3) Complete laser film marking evaluation
- 4) Complete redesign, fabrication and assembly of vacuum film holddown mechanism
- 5) Complete optical debugging